# RCS100

## ISDB-T

### MONITORING SYSTEM FOR ISDB-T NETWORKS TO ANALYZE AND ENSURE THE QUALITY OF THE NETWORK



### **PROFESSIONAL MONITORING:**

#### **RF ANALYSIS**

- O Real Time spectrum
- **O** Two ways of operation: channel analysis or multiple channel polling
- Signal qualit y measurements: Power, C/N, MER, Pre-BER (by layer), Post-BER (by layer), Shoulders
- O Alarm log (real time) and representation (time evolution)

#### **TS ANALYSIS**

O Bitrate
O Level 1, 2 priority error analysis
O Table repetition and quality analysis
O Services treeview

#### AND MUCH MORE...

O Video thumbnails
O Local display of measurements and alarms
O 1 RF input, 1 ASI input, 1 ASI output, and HDMI audio/video output
O Ethernet connectivity
O 1 PPS & 10 MHz synchronization inputs
O HTML5 control application
O SNMP v2.0 alarms

#### **OPTIONAL FEATURES**

- ✓ IP (TSoIP) INPUT
- ✓ Redundant IP INPUT
- ✓ Additional DVB standard
- ✓ Full historical measurements with alarms
- analysis
- ✓ Advanced Measurements
- ✓ Frequency offset
- ✓ Extended TS Analysis
- (Level 3 priority errors. PCR Jitter. Network Del

**GSERTEL** 

- ✓ BTS Analysis
- ✓ TS Recording
- ✓ Live Streaming

# RCS10

#### ADVANCED REMOTE MONITORING SYSTEM FOR ISDB-T



#### MANAGEMENT SYSTEM



#### **ALL IN ONE**

Shows an overview of the channel status on one screen. It shows spectrum, services, measurements, alarms, Pids. All integrated in a single view for quick analysis



#### **FULL SPECTRUM (OPT.)**

Represents realtime spectrum of the monitorized channel with detailed measurements, mask, max. and min. hold features

SPECIFICATIONS

Standards

Inputs RF:  $1 \times 50 \Omega$  N connector RF Input Frequency: 47MHz to 1GHz SYNC: 1 x 1PPS BNC 50 Ω 10Mhz BNC 50 Ω TS: 1 x ASI IN BNC 75Ω. IP: 2 x GE RJ45 (TSoIP) (opt.)

Outputs TS: 1 × ASI OUT BNC 75Ω

| RF Measurements                            |
|--|
| 20 MHz Spectrum                            |
| Power, C/N, Shoulders                      |
| MER, CBER, VBER                            |
| Pre-BER (by layer) and Post-BER (by layer) |
| Frequency Offset (opt.)                    |
| Constellationn (opt.)                      |
| Echoes (opt.)                              |
| Full Spectrum (opt.)                       |
|  |

#### **MPEG Measuremenst**

Level 1,2 y 3 priority errors (level 3 opt.) Alarms log analysis PCR Jitter (opt.)

|   |   |   |          | _           |  |   | and the second se | and the second second             |
|---|---|---|----------|-------------|--|---|---|-----------------------------------|
| Seriel I  | RC6100  | _   | _        | _           | _  | 05-10-2014 1:   | 5:15:19 admin 🖉   | ASI 1                             |
| _   | All In One  |   | _        | TS Analysis | _  | P Anahaja Paling Airma  | RF 1<br>Historical  | ASI1                              |
|   |   |   | _        | Polling     | _  | Configuration   |   | _                                 |
|   |   | Meas  | ures     |             |  | Poling  |   |                                   |
|   | POwER<br>(dspV)   | C/N<br>(dtt)  | MER      | CBER        | VEER   | 19 aur  | Passing.  |                                   |
| 21<br>474MHz  | 29.5  | 6.98  |          |             |  |   |   |                                   |
| 22<br>482MHz  | 55.9  | 31.2 🖌  | 24.3 (1) | 1.05-3      | <1.05-8  | 104   |   |                                   |
| 23<br>490MHz  | 47.2 (1)  | 20.1  | 20.3     | 9.70-3      | 4.50.7   | 90  |   |                                   |
| 24<br>498MHz  | 25.1 (8)  | 7.2   |          |             |  | 80<br>10  |   |                                   |
| 25<br>504MHr  | 24.7  | 8.10  |          |             |  | 50<br>50  |   |                                   |
|   |   |   |          |             |  |   |   |                                   |
| 26  | 23.6  | 6.9   |          |             |  |   | _   |                                   |
| 514MHz 27   | 23.6  | 6.9 <b>8</b>  |          | 9.70-2.0    |  |   | 1   |                                   |
| 27<br>522MHz<br>28  | -   | -   |          |             | -  | վերը, որկել, իսկե   |   |                                   |
| 27<br>522MHz<br>28<br>530MHz<br>29  | 35.0  | 14.6 <b>%</b><br>7.6 <b>%</b>   |          |             | >1.00-3  | վատուսիրութուր  | J.  |                                   |
| 27<br>522MHz<br>28<br>530MHz<br>29<br>538MHz<br>30  | 35.0 <b>8</b><br>32.9 <b>8</b><br>23.7 <b>8</b>   | 14.6 <b>8</b><br>7.6 <b>8</b><br>5.9 <b>8</b>   |          |             | ×1.05-3@<br>×1.05-3@   | վուտուրիզուիարի   |   | 61 47 62                          |
| 27<br>522MHz<br>28<br>530MHz<br>25<br>538MHz<br>30<br>546MHz<br>31  | 35.0 <b>8</b><br>32.9 <b>8</b><br>23.7 <b>8</b><br>20.7 <b>8</b>  | 14.6 <b>8</b><br>7.6 <b>8</b><br>5.9 <b>8</b><br>4.7 <b>8</b>   |          |             | >1.02-3.8<br>>1.02-3.8<br>   | միստոսիկվունուն   | N 20 00 00 00 00 00 00 00 00 00 00 00 00  | 66 67 68                          |
| 514MHz<br>27<br>522MHz<br>28<br>530MHz<br>25<br>538MHz<br>30<br>546MHz<br>31<br>544MHz<br>12  | 35.0<br>32.9<br>23.7<br>20.7<br>8<br>17.5<br>8  | 14.6 <b>(a)</b><br>7.6 <b>(b)</b><br>5.9 <b>(b)</b><br>4.7 <b>(c)</b><br>1.4 <b>(b)</b>   |          |             | ×1.05-3.0<br>×1.05-3.0<br>0<br>0   | վիսկտատկերինին  | 15 Error (1643)   | n er n<br>0                       |
| 514MHz<br>27<br>522MHz<br>28<br>530MHz<br>25<br>538MHz<br>30<br>546MHz<br>31<br>554MHz<br>32<br>562MHz  | 35.0 e<br>32.9 e<br>23.7 e<br>20.7 e<br>17.5 e<br>18.9 e  | 14.6 (e)<br>7.6 (e)<br>5.9 (e)<br>4.7 (e)<br>1.4 (e)<br>1.3 (e)   |          |             | ×1.05.30<br>×1.05.30<br>0<br>0<br>0<br>0<br>0  |   | TS Error Prist3   | 0                                 |
| 51444Hz<br>27<br>5224Hz<br>28<br>5304Hz<br>29<br>538MHz<br>30<br>5464MHz<br>31<br>5545MHz<br>32<br>5422Hz<br>33<br>5704Hz   | 35.0<br>32.9<br>23.7<br>20.7<br>8<br>17.5<br>8  | 14.6 <b>(a)</b><br>7.6 <b>(b)</b><br>5.9 <b>(b)</b><br>4.7 <b>(c)</b><br>1.4 <b>(b)</b>   |          |             | ×1.05-3.0<br>×1.05-3.0<br>0<br>0   |   | TS Error Prista<br>Limit  | e<br>Velue                        |
| 514MHz<br>27<br>522MHz<br>28<br>530MHz<br>29<br>538MHz<br>30<br>546MHz<br>31<br>554MHz<br>32<br>552MHz<br>33  | 35.0 e<br>32.9 e<br>23.7 e<br>20.7 e<br>17.5 e<br>18.9 e  | 14.6 (e)<br>7.6 (e)<br>5.9 (e)<br>4.7 (e)<br>1.4 (e)<br>1.3 (e)   |          |             | ×1.05.30<br>×1.05.30<br>0<br>0<br>0<br>0<br>0  |   | TS Error Prist3<br>Limit<br>24.0 dB   |                                   |
| 27<br>5323/Htt<br>28<br>5323/Htt<br>29<br>5383/Htt<br>29<br>5463/Htt<br>31<br>5545/Htt<br>32<br>5423/Htt<br>33<br>5545/Htt<br>33<br>3705/Htt<br>34  | 35.0 <b>8</b><br>32.9 <b>8</b><br>23.7 <b>8</b><br>20.7 <b>8</b><br>17.5 <b>8</b><br>18.9 <b>8</b><br>21.3 <b>8</b> | 14.6 (e)<br>7.6 (e)<br>5.9 (e)<br>4.7 (e)<br>4.7 (e)<br>1.4 (e)<br>1.3 (e)<br>3.4 (e)   |          |             | +1.05-3.0<br>+1.05-3.0<br>   | Image: Section of the sectio | TS Error Prist3<br>Limit<br>24.0 dB   | e<br>Velor                        |
| 27<br>27<br>28<br>28<br>532MHz<br>28<br>538MHz<br>30<br>544MHz<br>30<br>544MHz<br>3554MHz<br>32<br>554MHz<br>33<br>570MHz<br>34<br>578MHz<br>35   | 35.08<br>32.98<br>23.78<br>20.78<br>17.58<br>18.98<br>21.38<br>21.38<br>25.98                                       | 144<br>72<br>59<br>47<br>47<br>14<br>13<br>13<br>13<br>14<br>13<br>8<br>7<br>8  |          |             | +1.00-3.00<br>+1.000-3.00<br>  | Plane         2         Televrhat         0         Televrhat         0   | TS Error Print3<br>Limit<br>24.0 dB   | 22.3 dB<br><1.00-6                |
| 5144442<br>27<br>28<br>5325442<br>28<br>5355444<br>35<br>5465442<br>31<br>5544642<br>33<br>5705442<br>33<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>34<br>5705442<br>370<br>370<br>370<br>370<br>370<br>370<br>370<br>370  | 35.0<br>32.9<br>23.7<br>20.7<br>17.5<br>17.5<br>18.9<br>21.3<br>21.3<br>22.5<br>22.5<br>22.1<br>22.1                | 1446<br>746<br>55%<br>47%<br>146<br>13%<br>34%<br>87%<br>45%  |          |             | +1.00 3 (0)<br>+1.00 3 (0)<br>+1.00 3 (0)<br>- (0) |   | TS Error Pri#3<br>Limit<br>24.0 dB<br><1.02-6   | 0<br>Vrtor<br>22.3 d8             |
| 5144444<br>27<br>28<br>5322MHz<br>28<br>538MHz<br>30<br>545MHz<br>31<br>554MHz<br>31<br>554MHz<br>33<br>570MHz<br>33<br>570MHz<br>33<br>570MHz<br>33<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570MHz<br>35<br>570<br>570<br>570<br>570<br>570<br>570<br>570<br>570<br>570<br>57 | 35.0 @<br>32.9 @<br>23.7 @<br>23.7 @<br>17.5 @<br>17.5 @<br>17.5 @<br>21.3 @<br>25.9 @<br>22.1 @<br>23.5 @          | 14.6<br>7.4<br>5.5<br>4.7<br>6<br>1.4<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>6<br>1.3<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>6<br>1.4<br>7<br>7<br>6<br>1.4<br>7<br>7<br>6<br>1.4<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7 |          |             | +1.003 <b>(a)</b><br>+1.003 <b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)</b><br><b>(b)(b)</b><br><b>(b)</b>   | Picture         2         Toture hurt         New         New           10  | TS Error Pri#3<br>Limit<br>24.0 dB<br><1.02-6   | 0<br>Vriter<br>22.3 d8<br>+1.06-6 |

#### POLLING

Continuous measuring of an user-defined number of channels

|              | 1268 10 196) ×      |                        |                  |  |                                |                            |                      |            |
|--------------|---------------------|------------------------|------------------|--|--------------------------------|----------------------------|----------------------|------------|
|              |                     | resume.php?timestamp=) | 1452212199       |  |                                |                            |                      | + 5        |
| DERTEL       | RC5100              | _                      |                  |  |                                | 21-05-201514               | 52:11 admin 🖉 \cdots |            |
| 1R 22 (63250 | (2) • D/311         |                        |                  |  |                                |                            | RF 1 (CH22           | 0 ASI 1    |
| AL           | In One              | TS Analysis            | Channel Analysis | Spectrum Analysis                      | Polling                        |                            | His                  | torical    |
|              |                     | View                   |                  |  |                                | Configuration              |                      |            |
|              |                     |                        | Historical       |  | Filter By Level                |                            |                      |            |
| a han        |                     |                        | Protonical       |  |                                |                            |                      |            |
|              |                     |                        |                  |  | Filter By Type:                |                            |                      | LS PIL2    |
|              |                     |                        |                  |  | Filter By ID:                  |                            | AL                   |            |
| an high      |                     |                        |                  |  | Show Last:                     |                            |                      | Lint 5 mil |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  | Reset Alarms:                  |                            |                      |            |
|              |                     |                        |                  |  | HEAL PERILL                    |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  | -                              |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  | •                              |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              |                     |                        |                  |  |                                |                            |                      |            |
|              | 2013-03-2114,47.10  |                        |                  | 2013-05-0114-00                        | 10                             |                            |                      |            |
|              |                     |                        |                  | Alarm List                             | 1                              |                            |                      |            |
| Error        |                     | 282 🔴 TS B             | rror Pri#1       | 0 🔴 TS Error Pri#2                     |                                | 76 🔴 TS Error Pri#3        |                      | 154        |
| hiarky       | TimeStamp           | ID                     | Nerse            |  | Description                    |                            | Unit                 | Value      |
| A            | 2015-05-21 14:52:10 | 41A4 CBER to           | a low            | CBER too low                           |                                |                            | 5.08-6               | 1.40-4     |
|              | 2015-05-21 14:52:10 | 23A1 PCR erro          | e                | Time interval between two consecutive  | PCR of PID 0x7D1 (Radio Nacion | nal Galicia) out of limits | 40.0 ms              | 40.3 ms    |
|              | 2015-05-21 14:52:10 | 32A3 Si repeti         | tion             | CAT Time interval is higher than limit |                                |                            | 500.000 ms           | 500.033 m  |
|              | 2015-05-21 14:52:08 | 41A4 CBER to           | a low            | CBER too low                           |                                |                            | 5.02-6               | 1.40-4     |
|              | 2015-05-21 14:52:07 | 32A3 Si repeti         | tion             | CAT Time interval is higher than limit |                                |                            | 500.000 ms           | 501.015 m  |
| 1.0          | 2015-05-21 14:52:06 | 41A4 CBER to           | a low            | CBER too low                           |                                |                            | 5.0E-6               | 1.58-4     |
|              | 2015-05-21 14:52:04 | 41A4 CBER to           | a low            | CBER too low                           |                                |                            | 5.08-6               | 1.96-4     |
| 1 <b>1</b>   |                     |                        |                  |  |                                |                            |                      |            |
|              | 2015-05-21 14:52:04 | 23A1 PCR erro          | e                | Time interval between two consecutive  | PCR of PID 0x7D1 (Redio Nacion | vel Galicia) out of limits | 40.0 ms              | 41.1 ms    |

#### ALARMS

Represents the alarms counter during an user-selected period of time

| IP flow measurements (opt.) | <b>Electrical Chara</b> |
|-----------------------------|-------------------------|
| Packet arrival max. & min   | Input 100 - 240 V       |
| IP & UDP payload bitrate    |                         |
| Media loss rate             | Interfaces              |
| Loss IP frames              | 1 x USB 2.0             |
| Corrected IP frames         | 1 x Ethernet RJ45       |
|                             | LCD Graphic disp        |
| Mechanical characteristics  | HDMI                    |

Size: 482mm W x 348mm D x 41mm H Working temperature: 0 a 40 °C Storage temperature.: 0 a 50 °

acteristics

**Control protocols** HTML and SNMP



Volta do Castro s/n - E15706 Santiago de Compostela · A Coruña · SPAIN T + 34 981 522 447 · F + 34 981 523 886 - info@gsertel.com www.gsertel.com